



Supplemental Manual to the DOE Stormwater Management Manual for Western Washington

Volume II Construction Stormwater Pollution Prevention

City of Auburn Community Development and Public Works Department

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Chapter 1 – Introduction to Construction Stormwater Pollution Prevention

1.1 Purpose of this Volume

Volume II of the City of Auburn (COA) Supplemental Manual to the Department of Ecology's (DOE) Stormwater Management Manual for Western Washington (SWMMWW) provides additional guidance for implementing Minimum Requirement #2 – Construction Stormwater Pollution Prevention within the City of Auburn.

1.2 Content, Organization, and Use of this Volume

The COA Supplemental Manual Volume II is organized to correspond to the DOESWMMWW Volume II. This Volume should be used in conjunction with the DOE SWMMWW to prepare and implement Construction Stormwater Pollution Prevention Plans (SWPPP). The Best Management Practices (BMPs) presented in both documents are required for construction projects located within the City.

Important additions and changes contained in the COA Supplemental Manual for this Volume include:

- **Chapter 1: Introduction to Construction Stormwater Pollution**
 - **Section 1.3** identifies Construction Stormwater Pollution Prevention Element 13 – Protect Low Impact Development (LID) BMPs as required for construction projects located within the City.
- **Chapter 2: Regulatory Requirements** identifies general stormwater permits relevant to this Volume and provides contact information for the City of Auburn Permit Center to assist in obtaining required City construction permits.
- **Chapter 3: Planning**
 - **Section 3.2** provides the thresholds for projects requiring a Construction SWPPP and the submittal requirements for the City of Auburn.
- **Chapter 4: Best Management Practices Standards and Specifications**
 - **Sections 4.1 and 4.2** contain additional requirements and guidelines for select Source Control and Runoff Conveyance and Treatment BMPs:
- **Supplemental Appendix II-C: Construction Stormwater Pollution Prevention Plan Short Form** provides a short form Construction SWPPP for use on projects that meet the criteria described in that appendix.

Omitted Sections

Several chapters and sections of the DOE SWMMWW do not require any additional clarification in the COA Supplemental Manual. Refer to the DOE SWMMWW for the following chapters and sections:

- **Chapter 1: Introduction to Construction Stormwater Pollution Prevention**

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- Sections 1.4 – 1.6 (all subsections)
- **Chapter 2: Regulatory Requirements**
 - Sections 2.1 – 2.5 (all subsections)
- **Chapter 3: Planning**
 - Section 3.1 (all subsections)
 - Section 3.3 (all subsections)
- **Resource Materials**
- **Appendices II-A and II-B**

1.3 Thirteen Elements of Construction Stormwater Pollution Prevention

Additional Requirements for the City of Auburn

The City of Auburn requires Element 13 – Protect Low Impact Development (LID) BMPs as part of the Construction SWPPP review, where applicable.

Chapter 2 – Regulatory Requirements

The two main general stormwater permits relevant to the use of this volume of the COA Supplemental Manual in conjunction with the DOE SWMMWW are:

- **The Phase II Municipal Stormwater General Permit** requires the City of Auburn to adopt ordinances and other enforceable mechanisms that implement stormwater controls for new development and redevelopment, including stormwater management of construction sites. The City is responsible for the enforcement of the ordinances and other enforceable mechanisms required by this permit.
- **The Construction Stormwater General Permit**, the requirements of which are outlined in Section 2.1 of the DOE SWMMWW.

Additional Requirements for the City of Auburn

Project proponents are required to obtain all applicable City of Auburn permits for construction activities. Contact the Permit Center at 253-931-3090 or online at www.auburnwa.gov for more information on required permits.

Chapter 3 – Planning

3.2 Construction SWPPP Requirements

Additional Requirements for the City of Auburn

The Construction SWPPP is a document that describes the potential for pollution problems on a construction project. The Construction SWPPP explains and illustrates the measures to be taken on the construction site to control those problems.

All sites are required to comply with elements #1-#13. The Construction SWPPP must include an explanation for any elements that are not used.

Unless located in a critical area, a SWPPP is not required for projects that:

- Add or replace less than 2000 square feet of hard surface, or
- Disturb less than 7000 square feet of land, or
- Grade/fill less than 500 cubic yards of material.

The Construction SWPPP Short Form may be used for projects that meet the thresholds found in Appendix C, Volume II of the COA Supplemental Manual.

Unless use of the SWPPP Short Form is approved by the City Engineer or his/her designee, a complete SWPPP is required for projects that:

- Add or replace 5000 square feet or greater of hard surface, or,
- Disturb greater than 1 acre, or
- Grade/Fill greater than 500 cubic yards of material, or
- Disturb critical areas or buffers.

Projects that are required to submit a complete Construction SWPPP must use the most current version of the Department of Ecology's Construction SWPPP Template, available at:

<http://www.ecy.wa.gov/programs/wq/stormwater/construction/>

The Construction SWPPP shall be prepared as a separate stand-alone document. Keep the Construction SWPPP on the construction site or within reasonable access to the site for construction and inspection personnel. As site work progresses, the plan must be modified to reflect changing site conditions, subject to the rules for plan modification by the City.

Chapter 4 – Best Management Practices Standards and Specifications

4.1 Source Control BMPs

BMP C163: Demolition of Buildings (Additional)

Description of Pollutant Sources

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This applies to removal of existing buildings by controlled explosions, wrecking balls, or manual methods, and subsequent clearing of the rubble. The loose debris can contaminate stormwater. Pollutants of concern include toxic organic compounds, heavy metals, asbestos, and suspended solids.

Pollutant Control Approach

Regularly clean up debris that can contaminate stormwater. Protect the storm drainage system from dirty runoff and loose particles. Sweep paved surfaces daily. Vacuum sweeping is preferred.

Additional Requirements for the City of Auburn

The following BMPs are required of all businesses and public agencies engaged in building demolition:

- Identify, obtain required City permits, and properly abandon all utility connections such as sanitary sewer, water, gas, fuel lines and tanks.
- If directed to keep water out of the storm system during demolition activity, storm drain covers or a similarly effective containment device must be placed on all nearby drains to prevent dirty runoff and loose particles from entering the storm drainage system. If storm drains are not present, dikes, berms, or other methods must be used to protect overland discharge paths from runoff.
- Utilize storm drain inlet protection **BMP C220: Storm Drain Inlet Protection** in Volume II of the DOE SWMMWW.
- Street gutters, sidewalks, driveways, and other paved surfaces in the immediate area of the demolition must be swept at the end of each work day to collect and properly dispose of loose debris and garbage.
- Use dust control methods **BMP C140: Dust Control** in Volume II of the DOE SWMMWW and/or **BMP S407: Dust Control at Disturbed Land Areas and Unpaved Roads and Parking Lots** in Volume IV of the DOE SWMMWW.

Additional Guidelines for the City of Auburn

The following BMPs are not required, but can provide additional pollution protection:

- If possible, a wall should be constructed to prevent stray building materials and dust from escaping the area during demolition.
- Schedule demolition to take place at a dry time of the year.

BMP C164: Building, Repair, Remodeling and Construction (Additional)

Description of Pollutant Sources

This activity refers to activities associated with construction of buildings and other structures, remodeling of existing buildings and houses, and general exterior building repair work. Washing of

buildings is covered under **S431 BMPs for Washing and Steam Cleaning Vehicles/Equipment/Building Structures** in Volume IV of the DOE SWMMWW. Painting of buildings is covered under **S420 BMPs for Painting, Finishing, and Coating of Vehicles, Boats, Buildings, and Equipment** in Volume IV of the DOE SWMMWW.

Pollutants of concern include toxic organics, suspended solids, heavy metals, asbestos, pH, oils, and greases.

Pollutant Control Approach

Employees must be educated about the need to control site activities. Control leaks, spills, and loose material. Utilize good housekeeping practices.

Additional Requirements for the City of Auburn

The following BMPs are required of all businesses engaged in building repair, remodeling, and construction:

- Employees must be educated about the need to control site activities to prevent stormwater pollution, and also must be trained in spill cleanup procedures.
- Spill cleanup materials, appropriate to the chemicals being used on site, must be available at the work site at all times.
- The work site must be cleaned up at the end of each work day, with materials such as solvents put away indoors or covered and secured so that vandals will not have access to them.
- The area must be swept daily to collect loose litter, paint chips, grit, and dirt.
- Absolutely no substance can be dumped on pavement, the ground, or in or toward storm drains, regardless of its content, unless it is only uncontaminated water.
- Bermed ground or drop cloths must be used underneath scraping and sandblasting work. Ground cloths, buckets, or tubs must also be used anywhere that work materials are laid down.
- Tools covered with non-water-based finishes or other materials must be cleaned in a manner that enables collection of used solvents for recycling or proper disposal. See **BMP S445** in Volume IV of the COA Supplemental Manual for disposal options.
- Inlet protection as described in **BMP C220** in Volume II of the DOE SWMMWW must be used if dust, grit, wash water, or other pollutants may escape the work area. This is particularly necessary on rainy days. Provide inlet protection over the storm drain at the beginning of the work day. Do not perform outdoor work during wet weather if contaminants could be washed off-site by rainfall.

Additional Guidelines for the City of Auburn

The following BMPs are not required, but can provide additional pollution protection:

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- Recycle materials whenever possible.
- Activities such as tool cleaning should occur over a ground cloth or within a containment device such as a tub.

4.2 Runoff Conveyance and Treatment BMPs

BMP C233: Silt Fence (Amended)

Additional Requirements for the City of Auburn

All silt fence applications shall conform to the City of Auburn Standard Detail E-02.

BMP C235: Wattles (Amended)

Additional Requirements for the City of Auburn

The City requires removal of non-biodegradable wattles and wattle netting at project completion.

BMP C250: Construction Stormwater Chemical Treatment (Amended)

Additional Requirements for the City of Auburn

Conditions of Use

Formal written approval from the DOE and the City of Auburn is required for the use of chemical treatment regardless of size. When approved, include the chemical treatment system in the Construction SWPPP.

Appendix II-C Construction Stormwater Pollution Prevention Plan Short Form

Additional Requirements for the City of Auburn

Projects falling within the thresholds listed below may use this short form instead of preparing a professionally-designed Construction SWPPP. If your project meets the following thresholds and includes or may impact a critical area, please contact the City to determine if the SWPPP short form may be used.

The Construction SWPPP Short Form may be used for projects meeting one of the following thresholds:

- Add or replace between 2,000 and 5,000 square feet of hard surface, or
- Clear or disturb between 7,000 square feet and 1 acre of land, or
- Grade/fill less than 500 cubic yards.

If project quantities exceed any of these thresholds, prepare a formal Construction SWPPP as described in Chapter 3 of this volume.

The SWPPP Short Form may also be used, with approval by the City Engineer or his/her designee, for projects that:

- Add or replace between 5000 square feet and 10,000 square feet of hard surface, or,
- Disturb critical areas or buffers.

The SWPPP Short form is available as a separate download at **XXXXXX**. **HYPERLINK TO BE ADDED BEFORE FINAL PUBLICATION.**

NOTE: ALL FIGURE REFERENCES TO BE UPDATED PRIOR TO FINAL PUBLICATION. FIGURES CURRENTLY UNDER DEVELOPMENT.

City of Auburn Construction Stormwater Pollution Prevention Plan Short Form

Project Name: _____

Address: _____

Contact/Owner: _____ Phone: _____

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☐ Utilities ☐ Other: _____

1. Total project area _____ (square feet)
2. Total proposed impervious area _____ (square feet)
4. Total existing impervious area _____ (square feet)
4. Total proposed area to be disturbed _____ (square feet)
5. Total combined volumes of proposed cuts/fill (not net) _____ (cubic yards)

Additional Project Information: _____

B. Existing Site Conditions (Check all that apply)

- Describe the existing vegetation on the site. (Check all that apply)
☐ Forest ☐ Pasture/prairie grass ☐ Pavement ☐ Landscaping ☐ Brush
☐ Trees ☐ Other _____
- Describe how surface water (stormwater) drainage flows across/from the site. (Check all that apply)
☐ Sheet Flow ☐ Gutter ☐ Catch Basin ☐ Ditch/Swale ☐ Storm sewer
☐ Stream ☐ Other _____
- Describe any unusual site condition(s) or other features of note.
☐ Steep Grades ☐ Large depression ☐ Underground tanks ☐ Springs
☐ Easements ☐ Existing Structures ☐ Existing Utilities
☐ Other _____

C. Adjacent Areas (Check all that apply)

1. Check any adjacent areas that may be affected by site disturbance and describe in fully describe in item 2 below:
☐ Streams* ☐ Lakes* ☐ Wetlands* ☐ Steep Slopes*

☐ Residential Areas ☐ Roads ☐ Ditches, pipes, culverts

☐ Other _____

** If site is on or adjacent to a critical area, the City of Auburn may require additional information, engineering, and other permits to be submitted with this short-form.*

2. Describe how and where surface water enters the site from upstream properties: _____

3. Describe the downstream drainage path leading from the site to the receiving body of water. (Minimum distance of ¼-mile (1320 feet)) {E.g. water flows from site, into curb-line to catch basin at intersection of X and Y streets. A 10-inch pipe system conveys water another 1000 feet to a ravine/wetland.}

D. Soils (Check all that apply)

The intent of this section is to identify when additional soils information may be required for applicants using this short form. There are other site-specific issues that may necessitate a soils investigation or more extensive erosion control practices. The City will determine these situations on a case-by-case basis as part of their review.

1. Does the project propose infiltration? Infiltration systems are restricted in certain locations. See Appendix I, Volume I of the Supplemental Manual for more information.

☐ Yes ☐ No

2. Does the project propose construction near or on steep slopes?

☐ Yes ☐ No

If infiltration is proposed for the site or steep slopes have been identified, the City will require soils information as part of the project design. The applicant must contact a soil professional or civil engineer specializing in soil analysis to perform an in-depth soils investigation. If yes is checked for either question, the City may not permit the use of this short-form.

E. Construction Sequencing/Phasing

1. Construction sequence: The standard construction sequence is as follows:

Mark clearing/grading limits.

Call Building Inspector to inspect clearing/grading limits.

Install initial erosion control practices (construction entrance, silt fence, catch basin inserts).

Contact Building Inspector to inspect initial erosion control practices.

Clear, grade, and fill site as outlined in the site plan while implementing and maintaining temporary erosion and sediment control practices at the same time.

Install permanent erosion protection (impervious surface, landscaping, etc.).

Contact Building Inspector for approval of permanent erosion protection and site grades.

Remove erosion control methods as permitted by the Building Inspector and repair permanent erosion protection as necessary.

Monitor and maintain permanent erosion protection until fully established.

List any changes from the standard construction sequence outlined above.

2. Construction phasing: If construction is going to occur in separate phases, describe:

F. Construction Schedule

- Provide a proposed construction schedule (dates construction starts and ends, and dates for any construction phasing).

Start Date: _____ End Date: _____

Interim Phasing Dates: _____

Wet Season Construction Activities: Wet season occurs from October 1 to April 30. Describe construction activities that will occur during this time period.

NOTE: Additional erosion control methods may be required during periods of increased surface water runoff.

2. Site Plan

The site plan must be specific to the project site. The example provided in **Figure C-1** is for reference only. A site plan, to scale, shall be included with this checklist that shows the following items:

- ___ a. Address, Parcel Number, Permit Number and Street names
- ___ b. North Arrow
- ___ c. Indicate boundaries of existing vegetation (e.g. tree lines, grassy areas, pasture areas, fields, etc.)
- ___ d. Identify any on-site or adjacent critical areas and associated buffers (e.g. wetlands, steep slopes, streams, etc.).
- ___ e. Identify any FEMA base flood boundaries and Shoreline Management boundaries.
- ___ f. Show existing and proposed contours.
- ___ g. Delineate areas that are to be cleared and graded.
- ___ h. Show all cut and fill slopes, indicating top and bottom of slope catch lines
- ___ i. Show locations where upstream run-on enters the site and locations where runoff leaves the site.
- ___ j. Indicate existing surface water flow direction(s).

- ___ k. Label final grade contours and indicate proposed surface water flow direction and surface water conveyance systems (e.g. pipes, catch basins, ditches, etc.).
- ___ l. Show grades, dimensions, and direction of flow in all (existing and proposed) ditches, swales, culverts, and pipes.
- ___ m. Indicate locations and outlets of any dewatering systems (usually to sediment trap).
- ___ n. Identify and locate all erosion control techniques to be used during and after construction.

See attached: **Guidelines for Erosion Control Practices and sample Site Plan.**

Onsite field verification of actual conditions is required.

Guidelines for Erosion Control Practices

As required by Ecology, this SWPPP must contain the 13 required elements. Check off each element as it is addressed in the SWPPP Short Form and/or on your site plan.

- ___ 1. Mark Clearing Limits (orange construction fence, staking with ribbon).
- ___ 2. Establish Construction Access (gravel entrance, tire wash area).
- ___ 3. Control Flow Rates (using pipe, drainage swales, berms).
- ___ 4. Install Sediment Controls (silt fence, sediment traps).
- ___ 5. Stabilize Soils (mulch, hydroseed, straw).
- ___ 6. Protect Slopes (divert water from top of slope, cover with plastic or erosion control blanket).
- ___ 7. Protect Drain Inlets (catch basin inserts).
- ___ 8. Stabilize Channels and Outlets (cover with grass, riprap).
- ___ 9. Control Pollutants (maintain equipment to prevent leaks).
- ___ 10. Control Dewatering (pump to sediment trap).
- ___ 11. Maintain BMPs (weekly maintenance/replacement, preparation for storm events).
- ___ 12. Manage the Project (establish construction schedule, phasing, contact numbers).
- ___ 13. Protect Low Impact Development BMPs (avoid compaction and/or sedimentation of bioretention areas, if applicable).

Several common erosion control techniques are explained and described in this section. Standard details for installation of these methods are included in this document. The applicant does not need to reproduce these drawings, but must indicate where each BMP will be used on a site plan and indicate which detail will be used. An example site plan and symbols list is provided to assist the applicant in preparation of their own site plan.

Only those erosion and sediment control techniques most pertinent to small construction sites are included here. More detailed information on construction BMPs can be found in Volume II of the Department of Ecology (DOE) Stormwater Management Manual for Western Washington (SWMMWW). The BMP numbers referenced are BMPs located in the DOE SWMMWW.

For phased construction plans, clearly indicate erosion control methods to be used for each phase of construction.

1. Mark Clearing Limits

All construction projects must clearly mark any clearing limits, sensitive areas and their buffers, and any trees that will be preserved prior to beginning any land disturbing activities, including clearing and grading. Clearly mark limits both in the field and on the plans. Do not staple or wire fences to trees.

Applicable BMPs include:

BMP C101: Preserving Natural Vegetation
BMP C102: Buffer Zones
BMP C103: High Visibility Fence

2. Establish Construction Access

All construction projects subject to vehicular traffic shall provide a means of preventing vehicle “tracking” of soil from the site onto City streets. At a minimum, there shall be a rock pad construction entrance at every construction access point. *Note: The applicant should consider placing the entrance in the area for future driveway(s), as the rock can be used for driveway base material.* The entrance(s) shall be inspected weekly and if excessive sediment is found, more rock shall be added to ensure proper functioning. **See Figure C-2 Construction Entrance.**

If sediment is tracked off site, it shall be swept or shoveled from the paved surface on a daily basis. Washing of the streets to remove the sediment is not permitted because wash water can transport sediments to streams and other water courses via the City storm drainage system.

The entrance must be identified on the site plan and must conform to Error! Reference source not found..

Applicable BMPs include:

- BMP C105: Stabilized Construction Entrance
- BMP C106: Wheel Wash
- BMP C107: Construction Road/Parking Area Stabilization

3. Control Flow Rates

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Flow control BMPs must be used to protect properties and waterways downstream of construction sites from erosion and the associated discharge of turbid waters. Construct stormwater retention or detention facilities as one of the first steps in grading. Protect permanent infiltration ponds from siltation when these facilities are used for flow control during construction.

A combination of drainage swales and possibly a sediment trap may be used to control runoff and trap associated sediment before it leaves the construction site.

A. Sediment traps

Refer to BMP C240: Sediment Trap and **Figure C-3 Sediment Trap Cross-Section and Outlet** (Figures 4.2.16 and 4.2.17, Volume II of the DOE SWMMWW).

Sediment traps are small temporary ponds (typically less than 3 feet deep) used to trap sediment suspended in site runoff before it leaves a construction site. As concentrated surface water pools within the pond, sediment is allowed to settle out of the water. Typically, a sediment trap will not be required for small sites as long as concentrated stormwater runoff (swales or ditches) does not occur.

Use [Table C- 1 Sediment Trap Sizing](#) below for sizing your sediment trap.

Contributing Area (Acres)	Required Surface Area of Pond (sq. ft.)
• 1/8 acre or less	• 130
• 1/4 acre or less	• 260
• 1/2 acre or less	• 520
• 3/4 acre or less	• 780
• 1 acre or less	• 1040

Table C- 1 Sediment Trap Sizing

If expected time of construction or downstream conditions warrant more protection, see BMP C240 for sizing information.

NOTE: If dewatering or significant stormwater runoff is expected, a sediment trap should be used to settle out solids before discharging to the City system.

B. Drainage Swales

Drainage swales are temporary ditches (minimum slope of 0.5% and a maximum of 10%) used to convey concentrated stormwater flows away from construction activities into a temporary sediment trap. Drainage swales carrying concentrated flows must discharge into a sediment trap or pond. Swales should be stabilized with erosion protection. See **Figure C-4 Drainage Swale Cross-Sections** (Figure 4.2.1, Volume II of the DOE SWMMWW) *Note: Swales should be completely stabilized before directing concentrated flows or they will erode.*

Applicable BMPs include:

- BMP C203: Water Bars
- BMP C207: Check Dams
- BMP C209: Outlet Protection
- BMP C235: Wattles
- BMP C240: Sediment Trap
- BMP C241: Temporary Sediment Pond

4. Install Sediment Controls

Sediment barriers should be used downslope of disturbed areas. Sediment barriers are intended to create a barrier to slow the “sheet” flow of stormwater and allow the sediment to settle out behind the barrier. Do not use sediment barriers in streams, channels, ditches or around inlets/outlets of culverts. Sediment barriers selected shall be identified on the site plan and must conform to the BMPs and/or City of Auburn Standard Details outlined below.

A. Silt fence

A silt fence is a temporary sediment barrier consisting of filter fabric, attached to supporting posts and entrenched into the soil. See **Figure C-5 Silt Fence** (City of Auburn Standard Detail E-02).

B. Berm Barriers

A continuous berm is a temporary diversion dike or sediment barrier. It may be constructed with:

- Wattles. See **Figure C-6 Straw Wattle Rolls** (Figure 4.2.14, Volume II of the DOE SWMMWW).
- Soil, sand, or aggregate encased within a geosynthetic fabric.
- Sand bags.

Applicable BMPs include:

- BMP C208 Triangular Silt Dike (TSD) (Geotextile Encased Check Dam)
- BMP C231: Brush Barrier
- BMP C232: Gravel Filter Berm
- BMP C233: Silt Fence

- BMP C234: Vegetated Strip
- BMP C235: Wattles

5. Stabilize Soils

Soil erosion protection is applied over the soil surface to reduce erosion from rainfall and wind. It can also be used to aid the establishment of vegetation. Between October 1st and April 30th, no soils shall remain exposed for more than 2 days unless they are being actively worked. From April 1st to September 30th, no soils shall remain exposed for more than 7 days unless they are being actively worked. Implement soil erosion protection in the following ways:

A. Mulches/Seeding/Hydroseeding

Mulching is the application of a protective layer of straw or other suitable material to the soil surface. Mulch can be applied to any site where soil has been disturbed and the protective vegetation has been removed. An approved Hydroseed mix for erosion control is provided in [Table C- 2 Temporary Erosion Control Seed Mix](#) below. Standards and guidelines for mulch are provided in [Table C- 3 Mulch Standards and Guidelines](#) below. Materials that may be used for mulching include:

- Straw or hay
- Compost material
- Wood or bark chips
- Hydraulically applied grass seed (Hydroseed)
- Bonded Fiber Matrix

Applicable BMPs include:

- BMP C121: Mulching
- BMP C120: Temporary and Permanent Seeding
- BMP C124: Sodding
- BMP C125: Compost
- BMP C126: Topsoiling
- BMP C130: Surface Roughening
- BMP C140: Dust Control

	% Weight	% Purity	% Germination
<ul style="list-style-type: none"> • Chewings or annual bluegrass <i>Festuca rubra</i> var. <i>commutate</i> or <i>Poa annua</i> 	• 40	• 98	• 90
<ul style="list-style-type: none"> • Perennial rye <i>Lolium perenne</i> 	• 50	• 98	• 90
<ul style="list-style-type: none"> • Redtop or colonial bentgrass <i>Agrostis alba</i> or <i>Agrostis tenuis</i> 	• 5	• 92	• 85
<ul style="list-style-type: none"> • White Dutch clover <i>Trifolium repens</i> 	• 5	• 98	• 90

Table C- 2 Temporary Erosion Control Seed Mix

Mulch Material	Quality Standards	Application Rates	Remarks
<ul style="list-style-type: none"> Straw 	<ul style="list-style-type: none"> Air-dried; free from undesirable seed and coarse material. 	<ul style="list-style-type: none"> 3" thick; 5 bales per 1000 sf or 2 to 3 tons per acre. 	<ul style="list-style-type: none"> Cost-effective protection when applied with adequate thickness. Hand-application generally requires greater thickness than blown straw. The thickness of straw may be reduced by half when used in conjunction with seeding. In windy areas, straw must be held in place by crimping, using a tackifier, or covering with netting. Blown straw always has to be held in place with a tackifier as even light winds will blow it away. Straw, however, has several deficiencies that should be considered when selecting mulch materials. It often introduces and/or encourages the propagation of weed species and it has no significant long-term benefits. Straw should be used only if mulches with long-term benefits are unavailable locally. It should also not be used within the ordinary high-water elevation of surface waters (due to flotation).
<ul style="list-style-type: none"> Hydro-mulch 	<ul style="list-style-type: none"> No growth inhibiting factors. 	<ul style="list-style-type: none"> Approx. 25-30 lbs per 1000 sf or 1500-2000 lbs per acre. 	<ul style="list-style-type: none"> Shall be applied with hydromulcher. Shall not be used without seed and tackifier unless the application rate is at least doubled. Fivers longer than about ¾ - 1 inch clog hydromulch equipment. Fibers should be kept to less than ¾ inch.
<ul style="list-style-type: none"> Compos ted Mulch and Compost 	<ul style="list-style-type: none"> No visible water or dust during handling. Must be purchased from supplier with a Solid Waste Handling permit (unless exempt) 	<ul style="list-style-type: none"> 3" thick, min.; approx. 100 tons per acre (approx. 800 lbs. per yard). 	<ul style="list-style-type: none"> More effective control can be obtained by increasing thickness to 3". Excellent mulch for protecting final grades until landscaping because it can be directly seeded or tilled into soil as an amendment. Composted mulch has a coarser size gradation than compost. It is more stable and practical to use in wet areas and during rainy weather conditions.
<ul style="list-style-type: none"> Chipped Site Vegetation 	<ul style="list-style-type: none"> Average size shall be several inches. Gradations from fine to 6-inches in length for texture, variation, and interlocking properties. 	<ul style="list-style-type: none"> 3" minimum thickness 	<ul style="list-style-type: none"> This is a cost-effective way to dispose of debris from clearing and grubbing, and it eliminates the problems associated with burning. Generally, it should not be used on slopes above approx. 10% because of its tendency to be transported by runoff. It is not recommended within 200 feet of surface waters. If seeding is expected shortly after mulch, the decomposition of the chipped vegetation may tie up nutrients important to grass establishment.

Table C- 3 Mulch Standards and Guidelines

B. Erosion Control Blankets/ Mats

Erosion control blankets are suited for post-construction site stabilization, but may be used for temporary stabilization of highly erosive soils. Erosion control blankets are suitable for steep slopes, stream banks, and areas where vegetation will be slow to establish. These blankets are typically made from straw, coconut fiber, excelsior, or synthetic material that is enveloped in plastic, biodegradable netting, jute, polypropylene, or nylon. **See Figure C-7 Erosion Blankets and Turf Reinforcement Mats** (Figures 4.1.3 and 4.1.4, Volume II of the DOE SWMMWW).

Applicable BMPs include:

- BMP C122: Nets and Blankets

C. Gravel/Riprap

Gravel and Riprap are used to protect hillsides, drainage channels, stream banks, and pipe outlets from erosion due to surface water flow.

D. Plastic Sheeting

Plastic sheeting is a temporary method of erosion control. Plastic covering provides immediate, short-term erosion protection to slopes, soil stockpiles, and other disturbed areas. Unlike the other erosion protection techniques mentioned above, plastic sheeting shall be removed prior to applying permanent erosion protection. **See Figure C-8 Tarp Covering.**

Applicable BMPs include:

- BMP C123: Plastic Covering

6. Protect Slopes

Design, construct and phase projects in a manner that will minimize erosion. Protect slopes by diverting water at the top of the slope. Reduce slope velocities by minimizing the continuous length of slope. This can be accomplished by terracing and roughening slope sides. Seeding and establishing vegetation on slopes will help protect slopes as well.

Applicable BMPs include:

BMP C120: Temporary and Permanent Seeding
 BMP C130: Surface Roughening
 BMP C131: Gradient Terraces
 BMP C200: Interceptor Dike and Swale
 BMP C204: Pipe Slope Drains

7. Protect Drain Inlets

To prevent sediment from entering drainage systems prior to site stabilization, install catch basin protection within onsite and nearby downstream catch basins. **See Figures C-9 Catch Basin Inlet Protection and X.10 Alternate Catch Basin Inlet Protection** (City of Auburn Standard Details E-03 and E-04) for acceptable methods of catch basin protection.

NOTE: Only Standard Detail E-03 is approved for use in City of Auburn right of way.

Applicable BMPs include:

BMP C220: Storm Drain Inlet Protection

8. Stabilize Channels and Outlets

All on-site conveyance channels shall be designed, constructed, and stabilized to prevent erosion from a Type 1A, 10-year, 24-hour frequency storm for the developed condition. Provide stabilization adequate to prevent erosion of outlets, adjacent streambanks, slopes, and downstream reaches at the outlets of all conveyance systems. The best method for stabilizing channels is to line the channel completely with a blanket product, then add check dams as necessary to function as an anchor and slow the flow of water. See Figure C-4 Drainage Swale Cross-Sections (Figure 4.2.1, Volume II of the DOE SWMMWW), Figure C-6 Erosion Blankets and Turf Reinforcement Mats (Figures 4.1.3 and 4.1.4, Volume II of the DOE SWMMWW), and Figure C-11 Temporary Channel Liners (Figure 4.2.2, Volume II of the DOE SWMMWW).

Applicable BMPs include:

- BMP C202: Channel Lining
- BMP C122: Nets and Blankets
- BMP C207: Check Dams
- BMP C209: Outlet Protection

9. Control Pollutants

All pollutants must be disposed of in a manner that does not cause contamination of surface waters. Do not maintain or repair any heavy equipment or vehicles onsite. Clean any spills immediately. Handle concrete and concrete waste appropriately. Use BMP C154 Concrete Washout Area for concrete cleanup. See Figures C-12 and X.13, Concrete Washout Area A and B (Figures 4.1.7a and 4.1.7.b, Volume II of the DOE SWMMWW).

Applicable BMPs include:

BMP C150: Materials on Hand
BMP C151: Concrete Handling
BMP C152: Sawcutting and Surfacing Pollution Prevention
BMP C153: Materials Delivery, Storage and Containment
BMP C154: Concrete Washout Area

10. Control Dewatering

All discharges to the City sewer system require City and King County approval. This approval process may be initiated by contacting the City. The City will coordinate the request for a letter of authorization from the King County Wastewater Treatment Division.

Any dewatering water must be discharged through a stabilized channel to a sediment pond.

11. Maintain BMPs

Maintain and repair temporary erosion and sediment control BMPs as needed. Inspect all BMPs at least weekly and after every storm event. Remove all temporary erosion and sediment control BMPs within 30 days after final site stabilization.

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12. Manage the Project

Projects shall be phased to the maximum degree practicable and take into account seasonal work limits. Inspect, maintain, and repair all BMPs as needed to assure continued performance of their intended function. Projects that disturb one or more acres must have site inspections conducted by a Certified Erosion and Sediment Control Lead (CESCL). Project sites less than one acre may have a person without CESCL certification conduct inspections. The SWPPP must identify the CESCL or inspector, who shall be present on-site or on-call at all times.

Applicable BMPs:

- BMP C150: Materials On-Hand
- BMP C160: Certified Erosion and Sediment Control Lead
- BMP C162: Scheduling

13. Protect Low impact Development BMPs

Clearly mark limits of Low Impact Development (LID) BMPs with web fencing or silt fencing. Maintain and repair LID BMPs such as rain gardens and bioretention areas as needed. Inspect all BMPs at least weekly and after every storm event. Restore on-site stormwater management BMPs to design conditions at the end of the project.